REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Rejection of Claims 1-13, 16-27, 29-31, 33-36, 39-45, and 47-49 under 35 U.S.C. § 112

Claims 1-13, 16-27, 29-31, 33-36, 39-45, and 47-49 are objected to for antecedent basis issues.

(a) Claims 1, 16, 30, and 36. Claims 1, 16, 30, and 36 have been objected to for reciting the limitation "*the larger IEEE 802.11 data packet frame*", for which there was considered to exist insufficient antecedent basis. These claims have amended to recite a separate claim line relating the size of the IEEE 802.11 frame and the IP packet received therein.

(b) Claim 16. Claim 16 has been objected to for reciting the limitation "*the IP data packet structure*", for which there was considered to exist insufficient antecedent basis. This claim has been amended to use the indefinite article preceding this limit.

(c) Claims 16 and 48. Claims 16 and 48 have been objected to for reciting the limitation "*the Maximum Transmission Unit (MTU)*", for which there was considered to exist insufficient antecedent basis.

The Maximum Transmission Unit (MTU) clearly finds antecedent basis as being inherent in an Internet Protocol (IP) standard, similar to how a “perimeter” finds antecedent basis in “a circle” in the phrase “the perimeter of a circle". The MPEP makes it clear that inherent aspects of an introduced element need not be introduced with the indefinite article, and further indicate objections should only be asserted where confusion would otherwise arise.

However, Applicant has amended Claims 16 and 48 to include a line that recites what is well known - that the IP protocol defines an MTU.

(d) Claims 2-13, 17-27, 29, 31, 33-35, 39-45, 47, and 49. These claims were objected to on the basis of their parent claims. The issues with the parent claims have

been resolved; each of the above claims is accordingly in a proper form.

2. Rejection of Claims 1-2, 4-7, 16-24, 36, 39-45, and 48 under 35 U.S.C. § 103(a).

Claims 1-2, 4-7, 16-24, 36, 39-45, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eccles et al. (U.S. Pat. No. 7,376,091) in view of Tong et al. (US Publ. No. 2002/0150040).

After carefully considering the grounds for rejection, the Applicant responds as follows.

(a) Claims 1, 2, 16, and 36. Each of these independent claims is rejected on similar grounds as discussed below.

Eccles Reference

Eccles teaches extracting IP packets from within an 802.11 network and then reformatting the packets (first sentence of Eccles Abstract), then putting them into the protocol for sending over the CDMA2000 cellular network.

(1) The Examiner asserts that the CRC in Eccles reads on the transmission of an FEC and checksums. However, a checksum only provides detection of error and not correction; as such, it is much shorter and simpler than forward error correction. The checksum can be used in existing frame structures, which don't have room for the FEC, whereas the present invention uses a portion of the additional bytes between the IP frame size and larger IEEE 802.11 packet frame to support FEC. Eccles thus does not teach this aspect of the invention.

Web encyclopedia "Wikipedia" (www.wikipedia.org) defines a cyclic redundancy check (CRC) as being an error-detecting code and further as follows:

> A cyclic redundancy check (CRC) is a type of function that takes as input a data stream of any length, and produces as output a value of a certain space, commonly a 32-bit integer. The term CRC denotes either the function or the function's output. A CRC can be used as a checksum to detect accidental alteration of data during transmission or storage. CRCs are popular because they are simple to implement in binary hardware, are easy to analyse mathematically, and are particularly good at detecting common errors caused by noise in

transmission channels.

(2) The Examiner is correct in saying that in the case of packet error, Eccles teaches that "*the transmitting station would resend the packet to the receiving station*" (emphasis added). This is a conventional treatment of packet error, which requires a great deal of overhead. Applicant's prior art FIG. 5 describes, such as in paragraph [0015], the overhead involved with frame/packet retransmissions - which the present invention is particularly directed to avoid. In contrast to this, Applicant's claims describe sending a partial packet retransmission, in which less than the whole packet is retransmitted. This is one of the major advantages of the present invention, further accentuated in Claim 1 by reciting the frame formatted into multiple blocks as already recited in other independent claims, including independent Claim 2.

In order to perform partial packet retransmissions, such as those recited in these independent claims, the apparatus must be configured for receiving error information about which blocks are in error so that those portions of the packet can be resent. Although Applicant contends that the present structure of these independent claims should be allowable as is, the retransmission of blocks in response to receiving a partial ACK is now explicitly recited in these claims.

The Examiner indicates that Eccles "*fails to explicitly teach performing partial packet retransmissions*", and attempts to remedy this by using a combination with the Tong reference.

Tong Reference

The Tong reference teaches a mechanism for retransmitting packets using a puncturing mechanism. The abstract of the Tong reference states that in response to packet receipt, either an acknowledgment (ACK) or no/negative acknowledge (NACK) is received, and "*in response to the NAKs, the transmitter will identify the **packet** that was not properly received, which is referred to as the packet for retransmission.*" Tong goes on to discuss how that packet is retransmitted, by first breaking the whole packet into subpackets and then "*puncture each subpacket into a packet in the sequence of*

packets being transmitted to the receiver." The entire packet is still retransmitted. By definition, Tong does not teach transmission limited to only a portion of a packet; thus, it is clear that Tong does not teach partial packet retransmission, but an alternate means of resending packets. In addition, the puncture mechanism of Tong has no relation to the manner in which the blocks are described as being sent in the claims of the instant application.

Puncturing, as performed by Tong, is described as being performed on the non-systematic bits, which are described as the "*parity bits that result from coding*" as recited in paragraphs [0009], [0034], and [0039]. As discussed above, the present invention does not utilize "*puncturing*" techniques and does not insert bits from a full packet being retransmitted (full packet retransmission) within the parity bits of a series of frames.

Another shortcoming of the Tong reference is that, like the Eccles reference, Tong is silent about stuffing an IP data packet into a larger IEEE 802.11 packet frame and using the additional bytes for sending the data for retransmission. Thus, Tong not only lacks teaching about the partial packet retransmission, but also lacks any teaching about the relationship of the IP packets used in the IEEE 802.11 about communicating partial packets.

Accordingly, Tong does not teach those aspects of the claim for which it is relied upon. Tong and Eccles, considered either separately or in combination with one another and what is known in the art do not teach all aspects of the invention as claimed.

2143.03 All Claim Limitations Must Be Taught or Suggested

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Asserted Combination

It is shown above that the combination of references does not add up to, or suggest, all the elements of these claims. Eccles is directed to a mechanism for bridging to a cellular network by reformatting the packets from the 802.11 network and sending them out on the CDMA 2000 cellular network, noted in the abstract of that reference. In contrast, Tong is directed to resending packets which are not acknowledged (NACK) by using a puncturing technique that involves breaking up the packets and sending pieces within checksums of various other packets as discussed in the abstract of that reference. Thus, combining Tong with Eccles could, at best, provide a means of retransmitting packets which were not received, but provides nothing in the way of partial packet retransmission, in which only a portion of a packet need be sent.

It is apparent that the Applicant has solved a different problem than that being addressed by the Eccles and Tong references, because each of these references provides a conventional detection of packet errors and the retransmission of the packet, whether in a single retransmission as in Eccles, or stuffed into parity bits spread across any number of packets as in Tong. Applicant teaches a new principle of operation for solving this problem. Refer to *Wright*, 6 USPQ 2d 1959 (1988).

> MPEP 2143.01A: "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab,* 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee,* 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)." Emphasis added.

Therefore, the Eccles and Tong references, either separately or in combination with one another and what is known in the art, do not teach all aspects of the instant application as recited within independent Claims 1-2, 16, and 36. Applicant respectfully

requests that the rejection of Claims 1-2, 16, and 36, and the claims that depend therefrom, be withdrawn and the instant application allowed to issue.

(b) Claims 3-13, 17-27, 29, 31, 33-35, 39-45, and 47-49. Each of these claims depends from an independent claim whose patentability has been discussed; therefore, each of these claims should be considered *a fortiori* allowable. Applicant respectfully requests that the rejection of Claims 3-13, 17-27, 29, 31, 33-35, 39-45, and 47-49 be withdrawn and the instant application allowed to issue.

3. Rejection of Claims 3, 10-13, 25-27, 29, 43, 47, and 49 under 35 U.S.C. § 103(a).

Claims 3, 10-13, 25-27, 29, 43, 47, and 49 were rejected under 35 U.S.C. 103(a) as being unpatentable over Eccles et al., (U.S. Patent No. 7,376,091) and Tong (U.S. Publication No. 2002/0150040) as applied to claims 1, 2, 16 and 41 above, and further in view of Pazos (U.S. Patent No. 7,315,515).

Dependent Claims 3, 10-13, 25-27, 29, 43, 47, and 49 depend from independent claims whose patentability has been discussed; these claims should be considered *a fortiori* allowable.

In addition, it should be appreciated that a number of these dependent claims recite aspects of the invention which provide additional patentable distinction over the cited references. Therefore, Applicant respectfully requests that the rejection of dependent Claims 3, 10-13, 25-27, 29, 43, 47, and 49 be withdrawn.

4. Rejection of Claims 30-31 and 33-35 under 35 U.S.C. § 103(a).

Claims 30-31 and 33-35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Eccles (U.S. Patent No. 7,376,091) in view of Tong (U.S. Publication No. 2002/10150040) and further in view of Pazos (U.S. Patent No. 7,315,515).

(a) Claim 30. Independent Claim 30 is directed to "*A network data transfer optimization system for optimizing network packet communications between two non-identical networks*."

The rejection of Claim 30 suffers from the same shortcomings as found with regard to Claims 1-2, 16, and 36 above. The support for this rejection similarly attempts to generalize the teachings recited in Applicant's claims based on references which do not disclose all aspects recited in Claim 30. Neither Eccles nor Tong teaches retransmitting only a portion of a packet as defined by the term "*partial packet retransmission*."

Applicant has amended Claim 30 to overcome the rejections under 35 U.S.C. § 112. In addition, Applicant has amended the claim to particularly point out that partial packet retransmission is performed in response to a partial ACK, as recited in dependent claims within the application, toward preventing future misunderstandings with regard to claim interpretation.

Eccles teaches extracting IP packets from within an 802.11 network and then reformatting the packets (first sentence of Eccles Abstract), and putting them into the protocol for sending over the CDMA2000 cellular network.

(1) The Examiner asserts that the CRC in Eccles reads on the transmission of an FEC and checksums. However, a checksum only provides detection of error and not correction; as such, it is much shorter and simpler than forward error correction. The checksum can be used in existing frame structures, which don't have room for the FEC, whereas the present invention uses a portion of the additional bytes between the IP frame size and larger IEEE 802.11 packet frame to support FEC. Eccles thus does not teach this aspect of the invention.

(2) The Examiner is correct in saying that in the case of packet error, Eccles teaches that "*the transmitting station would resend the packet to the receiving station*" (emphasis added). This is a conventional treatment of packet error, which requires a great deal of overhead and delay. In contrast to this, Applicant's claims describe sending a partial packet retransmission, in which less than the whole packet is retransmitted. This is one of the major advantages of the present invention. Claim 30, however, recites the partial packet retransmission as retransmitting blocks within the

packets - which is not taught by the cited references.

In order to perform partial packet retransmissions, such as those recited in Claim 30, the apparatus must be configured for receiving error information about which blocks are in error so that those portions of the packet can be resent. This is not taught by the combination of cited references. Although Applicant contends that the present structure of Claim 30 should be allowable as is, the retransmission of blocks in response to receiving a partial ACK is now explicitly recited in Claim 30.

The combination with Tong does not overcome the shortcomings of Eccles, because Tong is directed to the use of retransmitting packets for which an ACK has not been received. The Tong reference teaches a mechanism for retransmitting packets using a puncturing mechanism. The abstract of the Tong reference states that, in response to packet receipt, either an ACK or a NACK (negative acknowledge) is received, and "*in response to the NACKs, the transmitter will identify the **packet** that was not properly received, which is referred to as the packet for retransmission.*" Tong goes on to discuss how that packet is retransmitted, by first breaking it into subpackets and then "*puncture each subpacket into a packet in the sequence of packets being transmitted to the receiver.*" Thus, Tong does not teach partial packet retransmission, but an alternate means of resending packets. In addition, the puncture mechanism of Tong has no relation to the manner in which the blocks are described as being sent in the claims of the instant application.

Puncturing, as performed by Tong, is described as being performed on the non-systematic bits, which are described as the "*parity bits that result from coding*" as recited in paragraphs [0009], [0034] and [0039]. As discussed above, the present invention does not utilize "*puncturing*" techniques and does not insert bits of a full packet within the parity bits of a series of frames.

Another shortcoming of the Tong reference is that, like the Eccles reference, Tong is silent about stuffing an IP data packet into a larger IEEE 802.11 packet frame and using the additional bytes for sending the data for retransmission. Thus, Tong not

only lacks teaching about the partial packet retransmission, but also lacks any teaching about the relationship of the IP packets used in the IEEE 802.11 about communicating partial packets.

Accordingly, Tong does not teach those aspects of the claim for which it is relied upon. Tong and Eccles, considered either separately or in combination with one another and what is known in the art, do not teach all aspects of the invention as claimed.

It is shown herein that the combination of references does not add up to or suggest all the elements of these claims. Eccles is directed to a mechanism for bridging to a cellular network by reformatting the packets from the 802.11 network and sending them out on the CDMA 2000 cellular network, noted in the abstract of that reference. Tong is directed to resending packets which are not acknowledged (NACK) by using a puncturing technique that involves breaking up the packets and sending pieces within checksums of various other packets as discussed in the abstract of that reference. Thus, combining Tong with Eccles could, at best, provide a means of retransmitting packets which were not received, but provides nothing in the way of partial packet retransmission, in which only a portion of a packet need be sent.

It is apparent that the Applicant has solved a different problem than that addressed by the Eccles and Tong references, because each of these references provides a conventional detection of packet errors and the retransmission of the packet, whether in a single retransmission as in Eccles, or stuffed into parity bits spread across any number of packets as in Tong. The Applicant teaches a new principle of operation for solving this problem.

Any of the above shortcomings is sufficient in itself to overcome the obviousness reference. Therefore, because the Eccles and Tong references, either separately or in combination with one another and what is known in the art, do not teach all aspects of the instant application as recited within independent Claim 30, Applicant respectfully

requests that the rejection of Claim 30, and the claims that depend therefrom, be withdrawn and the instant application allowed to issue.

(b) Claims 31 and 33-35. Dependent Claims 31 and 33-35 depend from independent claims whose patentability has been discussed; these claims should be considered *a fortiori* allowable.

In addition, it should be appreciated that a number of these dependent claims recite aspects of the invention which provide additional patentable distinction over the cited references. For example, Claims 34-35 recite the inclusion of checksums and FECs for each specific block within a packet, in which errors within a specific block of a packet can be discerned rather than merely knowing if a packet is in error.

Applicant respectfully requests that the rejection of this group of dependent claims be withdrawn.

5. Amendment of Claims 1, 2, 10, 16, 25, 30, 36, 40, and 48.

Claims 1, 16, 30, 36, and 48. Claims 1, 16, 30, 36, and 48 have been amended to overcome antecedent basis issues asserted by the Examiner. In these amendments, antecedent basis is clearly addressed by the insertion of an additional clause which specifically recites the packet relationship (Claims 1, 16, 30, and 36), and/or the meaning of the MTU (Claims 16 and 48).

Claims 1, 2, 16, 30, and 36. In view of the misinterpretation of "*partial packet retransmission*", these claims have been amended to recite that this is performed to retransmit a block within a packet in response to receiving a partial ACK, as recited in the original dependent claims, as well as in the specification, including paragraph [0066]. A portion of the material from Claims 16, 30, and 36 has been incorporated into Claims 1 and 2 using language regarding the multiple blocks.

6. Amendments Made Without Prejudice or Estoppel.

Notwithstanding the amendments made and accompanying traversing remarks provided above, Applicant has made these amendments in order to expedite allowance of the currently pending subject matter. However, Applicant does not acquiesce in the

original grounds for rejection with respect to the original form of these claims. These amendments have been made without any prejudice, waiver, or estoppel, and without forfeiture or dedication to the public, with respect to the original subject matter of the claims as originally filed or in their form immediately preceding these amendments. Applicant reserves the right to pursue the original scope of these claims in the future, such as through continuation practice, for example.

7. Conclusion.

Based on the foregoing, Applicant respectfully requests that the various grounds for rejection in the Office Action be reconsidered and withdrawn with respect to the discussion presented herein and the present form of the claims, and that a Notice of Allowance be issued for the present application to pass to issuance.

In the event any further matters remain at issue with respect to the present application, Applicant respectfully requests that the Examiner please contact the undersigned below at the telephone number indicated in order to discuss such matter prior to the next action on the merits of this application.

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Respectfully submitted,

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